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ABSTRACT

The primary goal of this project was to determine and evaluate the effects of exposing groups of poverty children to a model educational program for differing lengths of time. The results indicated that the children who participated in the Learning to Learn Program made significantly greater developmental gains than the control children who participated in traditional educational programs. It is pointed out that the most encouraging results obtained were those from the standardized achievement tests (Primary Mental Abilities, Metropolitan Readiness Test, and Stanford Achievement Test) administered to both groups. On almost all subtests of the three achievement tests the experimental group out-performed their controls. It is suggested that this study should be replicated, although the tentative nature of the findings should not detract from their importance. In addition, it was concluded that the data raise hope of the possibility of weighing educational benefit against educational cost. (Author)

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THE LEARNING TO LEARN PROGRAM

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Introduction

The impetus for designing the Learning To Learn Program came from the author's study of a growing research literature which questioned some traditional assumptions concerning child development.

One assumption questioned was that the child is not ready to reason or deal with organized learning material until the primary grades.

A second assumption was that the major function of early education is to promote the social and emotional development of the child and to place comparatively little emphasis on cognitive development.

A third assumption was that the young child must initially acquire factual knowledge or content in order to develop adequate learning skills for later school success.

A fourth assumption was that the child enters kindergarten with a broad range of emotional, social, and cognitive experiences.

Reading the research literature and working extensively with young children led the author to two conclusions:

1. the narrow definition of the whole child had grossly underestimated the child's psychological strength and potential for learning and
2. most of the typical kindergarten experiences were neither relevant nor appropriate to what lay ahead for children, especially poverty children.

The limitations of the traditional kindergarten program suggested the need for a new direction in early childhood education.

It seemed worthwhile to design and operate an early education program which: 1) gives the teacher and child a sense of purpose and direction, 2) makes the teacher responsible for the emotional-social-cognitive development of every child, 3) recognizes individual differences and adjusts teaching strategy to each child's rate and level of learning, 4) provides a continuum of learning experiences to match the child's rate and level of learning, 5) makes the child aware of the learning process and how to utilize himself to learn, and 6) provides continuity with first grade.

The above characteristics formed the basis of a structured program with specified behavioral objectives. The Learning To Learn Program was a comprehensive approach to the education of children, integrating the variables that bear directly on education: the child, the teacher, the curricular materials, and the parent.

The program was based on three premises regarding children and their education. First: the educational process begins in early childhood. An organized, systematic, sequential curriculum and curricular materials should be introduced at this point. Second: the first few years of school should provide the child with opportunities to learn to learn. These opportunities are of an emotional-social-cognitive nature. Third: every child has an inner drive toward maturity, increased competence, and mastery over his environment, and looks to adults for behavior and attitudes which are appropriate to this growth.

The following principles guided the design and development of the Learning To Learn Program:

1. The likelihood for meaningful and permanent learning is greater if the child is given the opportunity to be an active learner and from the onset is given a major share of work and

responsibility. This lively participation can be achieved through an open discussion and exchange of ideas between teacher and children; also through involving the child in decision-making and problem-solving activities. The teacher must allow the child to be more active than she.

2. Inner satisfaction and feelings of adequacy develop when the curriculum is structured so that the child can cope with and master each new learning experience. The confidence gained from each success improves his performance and stimulates his growth toward independence and responsibility.

3. A child's awareness that the application of his knowledge has made a contribution to himself and to someone else builds up a sense of self-worth.

4. Learning appears to be more meaningful to the child when it comes in the form of a problem or game which challenges him and sparks his curiosity. The challenge occurs when he meets a situation that is familiar yet includes an element of the unknown or calls for a level of functioning one step higher than what he is used to.

5. Knowledge, language, concepts and attitudes acquired in school will more likely become a part of the child's permanent repertoire of behavior if they are immediately useful to him in the making of decisions and the solving of problems in his daily life.

6. The child should be given opportunities for the interaction of multiple sensory and motor activities, and he should be encouraged to develop language to talk about these activities.

7. Exposing the child to learning experiences will have lasting good effects only when these experiences are properly timed and structured and offered to the child on a continuing

basis.

8. The child learns to communicate effectively from interaction with a teacher who stimulates and sensitively guides his reasoning. She provides a friendly social setting for an exchange of views and a sharing of information.

9. For lasting effects the school should provide for the active involvement of parents and encourage their commitment to the objectives of the program.

These principles led to the specific objectives of the Learning To Learn program which are outlined below:

1. to introduce a continuous sequential curriculum founded upon concepts and structures seen as basic to the overall development of young children.

2. to change the traditional role and function of the teacher by emphasizing:

   a. responsibility for seeing that every child, every day, is exposed to planned learning experiences and materials.

   b. guidance and stimulation which diminish teacher participation and increase conversation and social interaction.

   c. active participation, inquiry, and exploration by the child.

3. to change the traditional role and function of the child by emphasizing:

   a. development of those inner attributes which enhance learning: attention, concentration, delay before responding, reflection, persistence, effort, etc.

b. performance over achievement.

c. application of knowledge acquired in order to make a contribution to himself and to someone else.

d. awareness of how he is learning and can utilize himself in learning.

e. independence through freedom with responsibility.

f. skill in developing strategies for problem-solving and decision-making.

g. balanced social, emotional, and intellectual development.

4. to accommodate individual differences in the rate and level of learning by a carefully sequenced curriculum, a variety of curricular materials, and the use of small groups monitored by a teacher who adjusts her teaching methods to these differences.

5. to give the teacher an opportunity to work with small groups and individual children by utilizing teacher assistants.

6. to involve parents and encourage their commitment to the objectives of the program by an active parent education program and by the provision of "homework"-type activities which reinforce the activities and values of the school.

The author anticipated problems implementing these objectives. The teacher's conventional training and experience did not fully prepare her for her role and functions. The new philosophy, methods, techniques, teaching styles and the new definition of the child's role differed substantially from what she had previously encountered. The unique home experiences of the poverty child, his methods of communicating and of relating

to teachers and peers were unfamiliar and not consistent with her own background and training.

The author anticipated the poverty child's difficulty in making the transition between the methods of control, communication, and problem-solving used in his home to the methods used at school. He expected that the child's past experiences would interfere with the development of the learner role and with his ability to take full advantage of classroom opportunities.

In view of their own school experiences, most of which were disappointing and unrewarding, there was some question as to the parents' willingness to participate and cooperate. This "parent education" aspect of the Learning To Learn Program was the weakest, most vulnerable, and the most likely to fail. The research literature spoke of poverty parents' child-rearing practices, health and nutrition practices, methods of discipline and control, attitudes toward school and education which might place severe limits on what the school could hope to achieve. A negative home environment could erode the positive effects on children of the school program. At the same time the literature offered very little guidance to those working with parents of poverty children. The author had no experience with such parents but gained it gradually as he pursued his goals of persuading poverty parents to come to monthly meetings, gaining their confidence and respect, getting them to participate actively in the parent education program, and enlisting their cooperation to follow through on the learning activities the school provided for home use.

Sample

All the children in the program were from low-income black families. It was their first school experience and, for most, their first group social experience.

In addition to language and communication deficits, these children manifested social and interpersonal problems, problems of motivation and of poor attitudes toward education, authority, and adults. Some were unable to take advantage of the opportunities of the classroom.

The parents', and in some instances grand-parents', description of their children at the first parent meeting prior to the opening of school gave the teachers some insight into the temperaments of the new pupils. The parents were asked how they would like the school to help their children during the school year. Some of their responses follow:

"Teach him to be not so mean."

"Teach him not to fight his brothers and sisters."

"Teach him to mind me."

"Teach him not to talk so much and so loud."

"Teach him not to just take things from somebody."

"Teach him his ABC's."

The parents of these children were on welfare or were employed in unskilled jobs. In approximately 40% of the homes, the fathers were absent and in a few cases, the child was living with grandparents. The number of children per family ranged from 3 to 9.

The children in this study came from adult-centered homes. Even when the parent was home there was very little

adult-child interaction. In many cases the adult watched television late into the night in the same room where children had to sleep. Frequently, the oldest child had the responsibility of supervising the younger children during the day. But in the evening and on weekends, when the parent was home, there was still very little adult supervision.

Program Description

The classroom was organized and managed so as to perform two functions. The first function was to achieve "here and now" goals. That is, the exposure to a variety of enjoyable experiences and the satisfaction of immediate needs for movement, stimulation, pleasure, exploration, manipulation, and social-emotional interaction. The second function - for the attainment of future goals - was to follow-through on the experiences of the small group.

The child's time and activities in the large classroom were, for the most part, unstructured. For example, following a "morning circle" which was made up of activities with emotional and social overtones and which followed up on "homework" activities brought to school, there was a free activity period for one-and-one-half to two hours.

Play was the central activity during this time. The classroom was equipped with a wide variety of materials. The children were free to choose what they would do. They could stay with the material as long as they wished and free to choose their playmates. An aide was in charge of the classroom.

The uniqueness of the Learning To Learn Program was the use of a second learning environment where four children, and the teacher, played with sequential curricular materials. This

was a hallway, supply, or clothes room that was free from visual and auditory distractions and protected from intrusions by classmates. Early in the year, each group spent 15 minutes per day there; in the spring, the periods lengthened to 20 to 30 minutes. Its primary function was to point up to the child how human interaction and personal involvement are closely linked to learning and must work in harmony for personal and group advantage. This learning environment was arranged and managed:

1. to promote learning as a personal experience that requires work, effort, persistence, and reflection. Ideas were sought, not right answers. Completion and cooperation were emphasized, not winning and competition.
2. to promote learning as a means to an end by providing opportunities - through games and game-like activities - to use what is learned.
3. to establish a "mental set" for learning. This was a special place and a special activity which required a specific set of behaviors and attitudes.
4. to promote learning as a social experience to be shared and enriched through interaction. The listening, sharing, and delay required gave every child first-hand knowledge of personal and property rights.

The primary purpose of the curriculum of the Learning To Learn Program was not to fill the child with facts and information. Rather, the curricular materials, the content of which was common to all children, were organized and structured:

1. to develop meaning through first-hand, practical experiences.
2. to give children the opportunity to learn through many modalities.
3. to show children how old and new knowledge fit together and build onto each other in an orderly and organized fashion: a learning hierarchy.
4. to give children and teacher a sense of direction and purpose.
5. to provide a continuum of learning experiences to match the child's rate and level of development.

Both the curriculum and curricular materials underwent continuous reassessment and revision as the test data and teachers' evaluation indicated areas of weakness and problems with language and materials. The revision and expansion of the published material, now in process, reflect this sensitivity to the test results and to judgements of the teachers who have used the material over the years.

One of the major changes was the shift away from heavy emphasis on cognitive development to a strong stress on the learning process and how it is influenced by human interaction, motivation, attitudes, and self-concept.

Our research and experience suggested that language and cognitive activities - to benefit later learning and development - must be nurtured within a human context solidly based on mutual trust, respect, and confidence. Furthermore, this kind of human involvement must be personal and on a daily basis.

The architect and master craftsman of such a balanced and healthy developmental program was the teacher. Her personal

style and her wise and imaginative use of the learning environment and curriculum captured the eyes, the ears, the brain, and the heart of every child. She was a good saleswoman who believed in what she was doing. She gave of herself without asking for immediate results for her efforts. She had faith that each child could learn and was patient but persistent in her efforts to make it happen. Her unhurried but steady pace, her calmness and friendly smile, and the physical closeness of the small group made each child feel wanted and comfortable. It was primarily these small-group times which brought about the changes in self-concept, group and social responsibility, respect for self and others, motivation for and interest in learning. And it was the teacher who made it all happen. Specifically, her role was to:

1. provide an open-ended type of conversation and inquiry to arouse the child's curiosity, challenge his level of ability and invite him to talk about his present and past experiences with the material.
2. ensure every child's right to be included and participate if he chose. And whatever the child's contribution, the teacher made him feel good about it, even when she had to correct misinformation.
3. create a learning climate whereby the child felt free and safe to talk about his own ideas and thoughts without fear of being wrong or different from the group. The child continuously heard and saw that he could be different and still be accepted. Ideas, rather than right answers, were rewarded.

4. recognize individual differences and adjust her teaching strategy to each child's rate and level of learning.
5. encourage active participation and stimulate the child's attention, thoughts, experiences, and knowledge so that he could gain insight into how he was learning and how to utilize himself in learning.

In summary, the healthy behavior and attitudes the child displayed in the large classroom (discipline problems were rare) took root in the small group learning environment. The three components which made a difference were:

1. a teacher who combined a role and style which touched the life of every child, every day, in a very personal way, and who permitted the child to touch her life.
2. an arrangement and management of the learning environment which promoted awareness of self and others and the learning process.
3. an organization and use of a structured curriculum that provided security, inner organization, and direction without being repressive and restrictive for teacher and child.

The focus of the curriculum was on the learner and the learning process, with the content serving only as a vehicle. The content was, nevertheless, carefully selected according to its relevancy to the child's experience, its familiarity to children of all socio-economic backgrounds, and its availability.

There was a language component* and a number and space component.** The language component was constructed around five content areas - clothing, food, animals, furniture, and transportation. The number and space component used sticks which vary in size and color, animal dice, and animal cards. The tools of learning changed through the year from the use of concrete, manipulative objects to a higher level of pictorial representations and, finally, to an arrangement of stimuli and experiences in a logical spatial and temporal order. This last level was designed to encourage self-expression and effective communication of thought processes.

The organization of the materials enhanced the learning process and allowed for reinforcement and reward. The same format of organization was maintained through each of the five content areas. The content changed but the format for the sequence of games remained quite similar. For example, the unit on transportation began the same way as the unit on animals, with miniature objects of that category which the child manipulated, explored, and talked about. Both units were revisited, but at a higher level of complexity, using the same game format and organization. Through this consistency of organization the child became comfortable using the materials and developed a set of learning attitudes and behaviors which were continuously reinforced. He began to know what to do and how to do it even though there was a change of content. He began to know that each successive game - whatever the unit - utilized the knowledge,

* Inquisitive Games, Discovering How to Learn. Science Research Associates (SRA) 259 E. Erie St., Chicago, Illinois 60611

** Inquisitive Games, Exploring Number and Space. SRA 259 E. Erie St., Chicago, Illinois 60611

strategies, attitudes, and learning sets of the preceding games but took them one step further.

Parent Education

Parent education was a prominent feature of the program. The monthly meeting was held in the classroom at a time convenient to the parents (Sunday afternoon at 3 o'clock). The teachers, teacher assistants, and director were present at every meeting to help the parents. The program itself was non-directive and parent-child-classroom oriented.

Unlike traditional PTA meetings, there were no lectures, no fund-raising activities, and no material rewards for attendance. Rather, the staff appealed to the parents' sense of pride and responsibility. The focus of the program was on their individual children and on an understanding of what the staff was trying to accomplish through the various means: the curriculum, organization and management of the classroom, and the role and function of the teacher.

There were three parts to the meeting: general announcements, video-tapes followed by parent discussions, and the demonstration of curriculum and how it related to suggested home activities.

After viewing videotapes of the large classroom and the small groups, the parents found it easier to talk in reference to their own child. They could better understand how to conduct the activities which the staff suggested be done at home. They saw the staff as models demonstrating how children could learn with their parents' help. Parents could identify with the teacher role. They developed a feeling of respect for the teacher and trust in her ability to provide cognitive, emotional, and social

growth. The most frequent comments by the parents were: "The teacher cares about my child" and "She seems to have so much patience."

The parent education program, therefore, tried: 1) to create and maintain a learning environment at home, 2) to instill the school's values in the home, where most learning occurs, 3) to move the parents to an active commitment to education, 4) to establish a closer parent-child relationship, and 5) to establish communication between school and home through a parent-teacher relationship that fostered mutual respect and confidence.

The high attendance at these meetings was not accomplished easily but was due to sheer persistence, patience, personal dedication and sacrifice on the part of the teachers and teacher assistants. The staff was unanimous in their observation that the amount of contact between mother and child had to be increased and the quality of that contact improved if the gains made in the Learning To Learn School were to have any holding power on the child when he entered the public school. The staff was determined and committed to do what was necessary to earn the respect and confidence of the parents; the result was the substantial improvement in getting parents committed to education and to the objectives of the program.

First Grade Program Description

We had children in mind when we designed the first grade program. Our interest was a classroom in which children were attracted and drawn to learning, attracted and drawn to each other, and attracted and drawn to the teacher. We assumed that

if the surroundings, the material, and the people were familiar enough, first grade could continue where the 5 year-old program ended. So the same children, the teacher, and aide came along to first grade. The room was not the same, but the teacher and aide organized it in a fashion similar to the classroom of the previous year. The curriculum content and the teaching practices which worked so well the previous year and were so familiar to the children, were continued.

By putting a wooden frame on wall board (bulletin board) and attaching two legs, the large classroom was partitioned off to make separate learning centers. Tables and chairs - arranged in fours so children could easily discuss and talk with each other - took up about half of the classroom. Across the room two learning centers were separated with the bulletin board on legs. One center was for typing and the other for listening. To reduce distractions and to encourage individual work, six little cubicles - made of heavy cardboard and glued to the table - provided each child with his own workspace and earphone. One corner of the room was partitioned off for the reading center. It had a rug where the children sat or stretched out. There was also a library table. Books could be used anywhere in the room - in an isolated spot by one child or shared with someone else. The classroom had a special rug which separated the tables and chairs from the typing and listening centers. As a child finished his work he came to the rug where he and the teacher sat together to read or talk about it. Other children frequently sat in (or stretched out) on this close and personal get-together waiting their turn or just listening to the teacher and child.

The children were free to move about at will, to talk and work with each other. The social, language, and intellectual development fostered through this kind of working together were perhaps the most obvious, but certainly not the only, benefits derived from this classroom organization and management. By giving children the freedom, independence, and responsibility to do as much for themselves and each other as they could, the teacher was free to help every child on an individual basis. Rarely did the class get together as a group. Most of the time it was teacher (or aide) and child working together at a time selected by the child.

The content of the curriculum - which combined numbers, language, social studies, science, and art - was a continuation of the five-year-old program. The day began with math. The children were divided into three groups: the aide worked with one group on the rug in the reading corner; the teacher had a second group on another rug; and a third group had a math activity on the listening tape. When finished, this last group had a choice of activities until the teacher and aide finished their math lessons. The teacher then took this third group for math while the aide played math related games with the first two groups.

The teacher maintained personal and close contact with the children by arranging them in a circle around her. Each child was separated by a heavy cardboard glued to a piece of 2 x 4 to keep it standing. For a workspace each child had an 18 x 24 cardboard.

A game and activity centered approach with Cuisenaire Rods were used to teach math. Card and dice games, and board

games that require the child to guess, judge relationships, and solve problems, gave children a personal and first-hand experience with numbers and operations.

Following a short break for a song or a moving-around activity the whole group came together on the rug. Here the teacher aroused the interest and curiosity of the group with a real-life experience which was familiar to everyone. The more the children participated in developing the activity, the more involved and thoughtful they became. When it appeared as though everyone understood the activity, and had his own ideas about how to proceed, the teacher turned everyone loose to follow his own individual lead. Everyone was on his own to extend the activity in his own direction and take as long as he wished to finish it. While they were free to work together, the individuality and diversity of the final products indicated the children treasured their own ideas more than the ideas of another child.

This activity was interesting because it allowed them to be active and involved with something they knew about from their own experience. It was challenging because they had to retrieve from memory past knowledge, then organize and think about it in a new way to fit the activity. They met the challenge successfully because of their opportunities the previous years to think, reason, generate ideas, and solve problems.

The teacher's choice to begin the school term with this activity was not left to chance. She knew the children and continued the curriculum from the point at which she stopped the previous year. As five year olds, they frequently used art to express ideas and to give new words concrete meaning. So it was logical and sensible to begin first grade with activities

that involved drawing pictures and writing words. This led to pictures and sentences and then pictures and creative stories. While art remained a favorite means of expression for many children, others preferred just to write. They became so proficient at writing that they could take two unrelated words like hen and church and develop a creative story. By the end of the year two other favorite activities were interpreting works of art (the teacher borrowed prints from the local public library) and writing their own endings to stories. The teacher would pick a story in which people or animals would be confronted with a predicament, conflict, or decision. She would read up to that point and stop; from there the child would take over.

Children were free to pace themselves with this activity. Some began and remained with it until completion. Others paused to engage in another activity they selected and then return to the original task. As a child finished he came to the rug where he would talk about his picture and read the words, sentences, or story he wrote. The teacher did not correct the finished product in the usual sense of being right or wrong. She did, however, have a standard for each individual child. She knew the past performance of every child in the class and she expected the child to come up to his own past performance. She accepted his work but let the child know if that task was or was not typical of his past performance. She might say, "I can tell you worked hard to do this, Claude, and you did such a good job," or "I can tell you worked very fast and did not think with your brain because this does not look like Eric's work."

After he read and discussed this first activity with the teacher, she gave him his work folder, containing work to be

finished by the end of the day. In the folder was at least one typing paper, one listening paper, and one reading paper. The folders were made up daily by the teacher and aide for each child. The number of papers and difficulty level was dependent upon the child's rate and level of learning. Consequently, not all children had the same work or same amount of work. Again, he could pace himself, but he had the responsibility to have it completed.

There was still another daily activity. Three or four children would go to the reading corner with the aide (or teacher). Here they would play dice games, card games, or board games with words and pictures. After they could recognize and use the words without the aid of the pictures, they read the words on sentence strips made by the teacher. When the teacher felt the group understood the meaning of the words and could use them, she let them read from the linguistic reader.

All materials and activities prepared for that day had a purpose and a direction. Everything was coordinated so that the learning activity on the listening tape was related to the typing activity and reading and language activities. The primary focus was on the understanding and use of concepts and symbols through first-hand experiences. The children understood the meaning of, and could use in a personal way, the words he met in a book. Reading was not an isolated subject but was tied to art, social studies, science, and human relationships.

Design and Methodology of the Evaluation

Design

During the 1968-69 school year two groups of children entered the experimental program while two control groups were enrolled in traditional programs. (See Figure 1)

Figure 1

Design of Project

Year	Grade	Age	Group	Status	Grade	Age	Group	Status
1970-71	1st	6	E4*	C4	2nd	7	E5	C5
1969-70	K	5	E4*	C4	1st	6	E5*	C5
1968-69	N	4	E4*	C4	K	5	E5*	C5

Disadvantaged Children

E4 N = 23 E5 N = 21

C4 N = 21 C5 N = 21

* In Learning To Learn Program

E Experimental groups participated in Learning To Learn Program during nursery, kindergarten and 1st grade.

C Control groups had either a combination of traditional day care, nursery, kindergarten, or elementary school experience.

Subjects were drawn from the same disadvantaged neighborhood in Jacksonville (Duval County), Florida. Two five-year-old groups were selected, with the experimental group (E5) attending the Learning To Learn School and the control group (C5) attending public school kindergarten

in Duval County. Two four-year-old groups were also selected, with the experimental group (E4) attending the Learning To Learn School and the control group (C4) attending OEO sponsored day care centers in Jacksonville.

During the 1969-70 school year, group E5 was in first grade at the Learning To Learn School, group C5 was in first grade in the Duval County public schools, group E4 was in kindergarten at the Learning To Learn School and group C4 was in kindergarten in Duval County public schools.

During the 1970-71 school year, groups E5 and C5 attended second grade in Duval County public schools, group E4 was in first grade at the Learning To Learn School, and group C4 was in first grade in the Duval County public schools.

General Methodology

The following developmental characteristics were assessed for both the experimental and control children in our project:

1. general intelligence
2. ability to express ideas
3. language comprehension
4. verbal reasoning ability
5. concept formation
6. creativity and imagination
7. achievement motivation
8. school achievement
9. parental involvement in, and attitudes towards the education of their child (groups E5 and C5 only)

Children were assessed individually to determine measurements of the cognitive areas. Questionnaires were developed and sent to parents to assess parent and child attitudes regarding education.

The measures regarding group achievement were administered to groups of four children at a time.

The diagnostic measures were selected to assess general as well as specific developmental characteristics and the status of the children in the program. Specific attention was paid to selecting age-appropriate measures. The following criteria were used in the choice of diagnostic measures: ease of administration, validity, reliability, the availability of normative data, and predictability for measuring outcomes of school instruction. In certain instances we developed special measures to assess specific types of achievement behavior.

The examiners were experienced white male and female psychometricians with extensive experience in evaluating young children. They were clinical psychologists, doctoral students, or psychological assistants in psychology, who established rapport with each child before the testing began.

The cognitive-related measures were administered individually to each child at the school with which he was familiar. The testing consisted of several 20-30 minute sessions. If a child was ill he was rescheduled. Each examiner tested both experimental and control children.

Results

Intellectual Data

The E4 group's mean IQ gain over three years of the Learning To Learn Program was 19.3 IQ points while their control

group (C4) gained only 3.0 over the same period. This represents a difference of 16.3 IQ points.

Insert Table 1

An examination of mean scores of Table 2 shows that the E5 group's Binet IQ score at the end of second grade in the public schools (and one year after the termination of their Learning To Learn Program) was 104.7.

Insert Table 2

The E5 group's IQ gain after second grade was 15 IQ points, while their control group (C5) lost 2.4 IQ points over the same period of time. The result: a 17.5 IQ point difference between the E5 and C5 groups at the end of second grade.

Achievement Data

When comparing the experimental (E4 and E5) and control (C4 and C5) groups on the subtests of the Stanford Achievement Test I (Table 3), the experimental groups out-performed their controls on all subtests. The E4 group superiority in terms of grade equivalents ranged from .6 years on word reading and paragraph meaning to 1.1 years on spelling, with a percentile rank difference of 48, 54, and 68,respectively. The E5 group superiority in terms of grade equivalents ranged from .2 years on word reading to 1.1 years on the spelling subtest, with a corresponding percentile rank difference of 12 and 70.

Insert Table 3

Table 4 represents the post second grade comparison between the experimental (E5) and control (C5) groups on the Stanford Achievement Test II. This is one year after the Learning To Learn Program terminated for the experimental group. The E5's scored better than their controls on all subtests of the Stanford Achievement test. Their grade equivalent superiority ranged from .3 years on language, which is a 14 point higher percentile ranking than their controls, to a 1.2 year grade equivalent superiority on the spelling subtest, which is a 40 point higher percentile ranking than their controls.

Insert Table 4

The results of the Metropolitan Readiness Test administered prior to entrance into first grade is presented in Table 5. Compared to their controls (C4 and C5), the E4 and E5 groups scored considerably higher on this test. In terms of grade letter rating, there is one letter grade difference between the experimental and control groups. In terms of percentile rank the E4 group had a 65 point percentile rank difference over the C4, and the E5 group had a 51 point percentile rank difference over the C5 group.

Insert Table 5

Reading Performance

The Spache Diagnostic Reading test was individually administered to the E4 and C4 groups at the end of first grade and the E5 and C5 groups at the end of second grade.

Table 6 is the comparison between the E5 and C5 groups on the Spache Diagnostic Reading Test.

Insert Table 6

On all three subtests the group mean of the E5 children was above grade level while the group mean of the C5 children was below grade level.

The E5 group was approximately one grade level higher than their controls on this test. Of importance are the data revealing that 7 out of 14 C5 children could not read at all, while only 1 out of 14 E5 children had the same problem.

When comparing the E4 and C4 children on the Spache Reading subtest (Table 7), the E4 group mean was above grade level whereas the C4 group mean was below grade level on all three subtests. The E4 reading ability on the three subtests was greater thantheir controls by one grade level. After first grade, 8 out of 16 control children could not read, while every E4 child was reading at or above grade level.

Insert Table 7

Academic Performance

Table 8 presents a post second grade comparison between the E5 (one year after termination of the Learning To Learn Program) and the C5 groups on academic Grade Point Average. The E5 group's G.P.A. was .75 grade points higher than their controls, approximately one letter grade difference. The seven

academic subtests used to compute the mean G.P.A. were reading, language, spelling, writing, social studies, science, and mathematics.

There were additional results which, while they lack the precision of objective measures, had a substantial influence on the school performance of the experimental (E4 and E5) children. Books were taken home every weekend and were read by the child or to him by his mother or older sibling. The child's work papers - which ranged from one during the latter part of kindergarten to eight in first grade - were read each day to the teacher and then taken home and read again to the parent. School-related work also flowed from home to school. Seventy percent of the children wrote stories, colored pictures, or cut pictures from magazines to bring to school where they were read and discussed.

In still other ways, the effort, motivation, and cooperation of the parents made an impact on the children's performance and on their attitudes toward school and learning. All the parents asked for books and school work (surplus papers) for their children during the summer vacation. Attendance at monthly parent meetings ranged from 80% to 100%, with some parents having perfect attendance. There was always perfect attendance for individual conferences where the child's progress was discussed with his parent.

The school attendance of the children was just as regular. More than half the children had perfect attendance. Only one child missed as many as 5 days of school the entire school year.

Discussion

The primary mission of this project was to determine and evaluate the effects of exposing groups of poverty children to different lengths of time of a model educational program.

The results of this study indicate that the children who participated in the Learning To Learn Program (E5 for two years and E4 for three years) made significantly greater developmental gains than the control children who participated in traditional educational programs. Both experimental groups (E4, E5) were functioning in the upper limits of the "average" range of intelligence, with a percentile rank of 66 for those who began at age four and a percentile rank of 60 for those who began at age five. When comparing the E4 and E5 age groups to the Negro standardization sample of the Binet their percentile ranks were at the 97th and 98th percentile levels, respectively. The level of functioning of the two control groups was in the "low average" range for the C5 group and the lower limits of the "average" range of intelligence for the C4 group with percentile ranks of 30 and 17, respectively.

It should be pointed out that the E5 group maintained their IQ gain from the Learning To Learn Program one year after its termination. Of equal importance, their Verbal IQ scores were above the 50th percentile rank and within the normal range of intelligence. It is apparent that the Learning To Learn Program has made a significant impact on the intellectual development of the poverty child.

Most encouraging are the results obtained from the standardized achievement tests (Primary Mental Abilities, Metropolitan Readiness Test, and Stanford Achievement Test) administered to both the E4, E5 and C4, C5 groups. On almost all subtests of

the three achievement tests the experimental group out-performed their controls. Most impressive is the finding that the E5 children were able to utilize and demonstrate their increased cognitive functioning on measures which, in our society, are predictors of future educational success. There is good reason to believe the same will be true for the E4 children when the follow-up data are analyzed. When making pre-and-post-and-1st grade comparisons between the E4 and E5 groups on the achievement measures, a trend appears that shows the E4 group performing at a higher level than the E5 group.

Language development has been described in the research literature as an area where poverty children show marked deficits. Indeed, the experimental and control children exhibited large deficits in language ability at the onset of this research project. The development of competence in this area is extremely important since academic achievement in our schools is highly related to and dependent on the capabilities of children to (1) express themselves, (2) comprehend written and spoken material, (3) acquire verbal reasoning ability, and (4) develop the ability to handle verbal concepts. The evaluation of the language area reveals some consistent results and some encouraging trends.

The E4 group after the 2nd year of the program demonstrated a superiority in language age over their control group. The data are presented and reported in terms of language age in order to make meaningful comparisons between each group of children and the standardization sample of the Illinois Test of Psycholinguistic Ability (I.T.P.A.). It also provides important information as to the language development status of each group in relation to

chronological age.

The E5 group's language ability, after two years of the Learning To Learn Program, had improved markedly, while the language functioning of the control group had become more and more impaired.

Mastery of the complexities of arithmetic by the E4 and E5 children has been accomplished in this program. By the end of first and second grades, the E4 and E5 groups of children had the ability to add and subtract and were functioning 6 and 8 mental age months, respectively, above their chronological age in arithmetic abilities. The curriculum and methodological approach of the Learning To Learn Program had apparently succeeded in educating poverty children in arithmetic skills.

An important criterion of whether compensatory preschool programs are effective is a post program evaluation of academic success in school. One year after termination of the Learning To Learn Program, the E5 group had a C+ to B- grade average compared to a D+ to C- average for their controls. These grade averages take on added significance in view of the fact that these black poverty children were enrolled in integrated schools in middle-class neighborhoods.

In terms of academic success in school no one ability plays as great a role as reading ability. Both experimental groups show above average reading ability after participating in the Learning To Learn Program, while 50% of their controls cannot read after 1st and 2nd grades. When viewed against the background of reading potential it is of interest to note that - after 1st grade - the E4 children are performing at the same level as the E5 children after second grade. The higher performance of the

experimental children who started at age four (E4) in the Learning To Learn Program, compared to the children who started at age five (E5), is currently being studied.

Our current findings - the report of which is being prepared - shows a trend which, if substantiated, would represent a major educational breakthrough. The data suggest that it may soon be possible to determine - with considerable accuracy - what kind, how much, and the cost of early childhood education necessary to bring children up to a level of development where they have the educational competence to succeed in subject matter and show attitudes and behavior that make learning possible. For example, a child who begins the Learning To Learn Program at age five and who falls in the 80 - 89 IQ range has a 50-50 chance of reading at grade level at the end of first grade. He has a 90% chance of performing at grade level in arithmetic. But if this same child begins the Learning To Learn Program at age four, his chances of reading at grade level jump to 95 percent and his chances of performing at grade level in arithmetic jump to 98 percent. The data suggest further that children of IQ 100+ need only one year of preschool to bring them up to the same level of educational competence.

Certainly this study should be replicated, but the tentative nature of these findings should not detract from their importance. The potential meaning and educational and economic benefits are established in realistic terms instead of using economic status as the criterion. And the data raise hope of the possibility of weighing educational benefit against educational cost.

How have these results been achieved? The substantial

gains made by the E4 and E5 children were due primarily to the following innovations:

1. Enlisting the cooperation and participation of the parents to supplement the school curriculum with a "home curriculum". The willingness of the parents to take the time and put forth the effort to help the child can be traced to a change in their attitude about education and their perceptions of their role.
2. Introducing an organized and structured curriculum which provided a flexibility in its use to meet the needs of the teacher and children. For the teacher and child, the curriculum meant guidance with considerable freedom. It provided the teacher with direction and a sense of purpose. She knew what she was doing, why she was doing it, and where she was heading. The flexibility and open-endedness of the curriculum gave her and the children considerable freedom to make maximum use of themselves.
3. Exposing every child every day to learning tasks - at his level - for the purpose of giving him an understanding of the learning process and helping him become aware of and utilize himself in learning.
4. Viewing children as beginning learners with individual differences - rather than children with deficits - helped to shape the teacher's attitudes, expectations, and teaching styles. The emphasis - through teacher training - on the teacher's close identity with the nature of children and their needs permitted her to

approach the child with patience, tolerance, trust, and respect.

In summary, by integrating the variables that bear directly on education - the parent, the curricular materials, the child, and the teacher - the Learning To Learn Program developed an educable child who knew how to feel, to think for himself, and to make use of himself to learn. He graduated knowing something about himself and about learning and he felt good about school.

In closing, three anecdotes are most appropriate to sum up the impact of the Learning To Learn Program on the public school, the child, and the parent. All the public school teachers who had Learning To Learn graduates the previous year asked for the new graduates coming into their schools. This is particularly significant in view of the fact that the principal and teachers openly resisted integration of their school. The teacher at this school was glad to waive the racial-balance policy - which was five blacks per class - in order to have all 12 of the Learning To Learn black graduates. Then there was the very personal remark of a parent at her last individual conference, who said, "I have nine children in school and this is the first time I got the feeling the teacher cared about me and my child." Finally, Kevin may have had similar thoughts the last day of school. He got on the bus and sat next to the author, who was driving. After a few minutes of silence he said, "Teacher, I don't know if I am going to like this idea of staying away from school all summer."

Table 1

A Longitudinal 3 year comparison between the Experimental (E4) and Control (C4) Groups on the Stanford Binet Intelligence Test

Measure	Group	N	Pre Intervention 1968 $\bar{X}$ IQ Pre-Nursery	During Intervention 1969 $\bar{X}$ IQ Post-Nur.	During Intervention 1970 $\bar{X}$ IQ Post-K	During Intervention 1971 $\bar{X}$ IQ Post-1st	Mean IQ Gain or Decline Over Time	After 3 Yrs. $\bar{X}$ IQ difference between groups
Stanford Binet	Experimental (E4)	23	87.7	107.4	108.6	107.0	19.3	16.3
	Controls (C4)	21	88.1	86.6	93.5	91.1	3.0	

Table 2

A Longitudinal 3 year comparison between the Experimental (E5) and Control (C5) Groups on the Stanford Binet Intelligence Test

easure	Group	N	Pre-Intervention 1968 $\bar{X}$ IQ Pre-K	During Intervention 1969 $\bar{X}$ IQ Post-K	During Intervention 1970 $\bar{X}$ IQ Post-1st	Post Intervention 1971 $\bar{X}$ IQ Post-2nd	Mean IQ Gain or decline over time	After 1 Year termination of project difference between groups
tenford Binet	Experi. (E5)	21	89.7	98.8	106.2	104.7	15.0	17.5
	Control (C5)	21	89.6	88.0	86.2	87.2	- 2.4	

A Post 1st Grade Comparison between the Experimental (E4 & E5) & Control (C4 & C5) Groups on the Stanford Achievement I

roups	N	Measures - Stanford Achievement I subtests												
		Word Reading		Para. Meaning		Vocabulary		Spelling		Word Study		Arithmetic		
		X̄ Gr. Score	% Rank	X̄ Gr. Score	% Rank	X̄ Gr. Score	% Rank	X̄ Gr. Score	% Rank	X̄ Gr. Score	% Rank	X̄ Gr. Score	% Rank	
4	20	1.9	50	2.0	58	2.1	58	2.5	86	2.1	64	2.3	74	
5	17	1.6	18	1.7	24	1.7	38	2.4	82	1.8	42	2.4	80	
4	17	1.3	2	1.4	4	1.3	8	1.4	14	1.4	14	1.3	6	
5	19	1.4	6	1.4	4	1.4	14	1.3	12	1.5	22	1.5	16	
		X̄ Diff.	% Rank Diff	X̄ Diff.	% Rank Diff.	X̄ Diff.	% Rank Diff.	X̄ Diff.	% Rank Diff.	X̄ Diff.	% Rank Diff.	X̄ Diff.	% Rank Diff.	
ff. bet. oups														
vs C4		.6	48	.6	54	.8	50	1.1	72	.7	50	1.0	68	
vs C5		.2	12	.3	20	.3	24	1.1	70	.3	20	.9	70	
vs E5		.3	32	.3	34	.4	20	.1	4	.3	12	.1	6	
vs C5		.1	4	.0	0	.1	6	.1	2	.1	8	.2	10	

Table 4

A Post 2nd Grade Comparison between the Experimental (E5) and Control (C5) Groups on the Stanford Achievement Test II

Gp	N	Measure - Stanford Achievement Test - Subtests															
		Word Mean.		Para. Mean		Sc. & Soc.		Spell.		Ws. Study		Language		Arith. Comp.		Arith Concept	
		MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R
E5	15	2.6	30	2.2	18	2.7	42	2.8	46	2.3	26	2.5	28	2.5	23	2.6	32
C5	20	1.9	10	1.6	2	1.9	14	1.6	6	1.9	14	2.2	14	1.9	8	1.7	6
Diff. between Means of Gps		MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R	MGE	% R
		.7	20	.6	16	.8	28	1.2	40	.4	12	.3	14	.6	15	.9	26

MGE = Mean Grade Equivalent
% R = Percentile Rank

Table 5

A Comparison of the Experimental (E4 & E5) and Control Groups (C4 & C5) on the Metropolitan Readiness Test (Total Score) Prior to their Entrance into 1st Grade

Group	N	Measure			
		Metropolitan Readiness Test Total Mean Raw Score	Standardization Norms % Rank	Letter Rating	Readiness Status
E4	22	70.6	82%	B	High Normal, good prospects for succe in 1st grade work
E5	17	64.0	69%	B	High Normal, good prospects for succe in 1st grade work
C4	14	36.1	17%	D	Low Normal, likely to have difficulty in 1st grade work
C5	20	36.7	18%	D	Low Normal, likely to have difficulty in 1st grade work
Diff. bet. Grps.		Total $\bar{X}$ Raw Score Points Diff.	Percentile Rank Diff.		
E4 vs C4		34.5	65%		
E5 vs C5		27.3	51%		
E4 vs E5		6.6	13%		
C4 vs C5		.6	1%		

Table 6

A Post 2nd Grade Comparison between the Experimental (E5) and Control (C5) Groups on the Spache Diagnostic Reading Test

Group	N	Measure		
		Spache Diagnostic Reading Test - Post 2nd Grade (1971)		
		Word Recognition $\bar{X}$ Grade Level	Instructional Reading $\bar{X}$ Grade Level	Potential Reading $\bar{X}$ Grade Level
E5	14	3.43*	3.50*	3.43
C5	14	2.34*	2.06*	2.58
Diff. between groups		1.09 $\bar{X}$ Grade Level Diff.	1.44 $\bar{X}$ Grade Level Diff.	.95 $\bar{X}$ Grade Level Diff.

* 7 out of the 14 Control (C5) children were not able to read after 2nd grade; while only 1 out of 14 of the Experimental (E5) children were not able to read.

Table 7

A Post 1st Grade Comparison between the Experimental (E4) and Control (C4) Groups on the Spache Diagnostic Reading Test

Group	N	Measure		
		Spache Diagnostic Reading Test * Post 1st Grade (1971)		
		Word Recognition $\bar{X}$ Grade Level	Instructional Reading $\bar{X}$ Grade Level	Potential Reading $\bar{X}$ Grade Level
E4	19	2.63*	2.51*	3.44
C4	16	1.54*	1.20*	1.80
Diff. between Groups		1.09 $\bar{X}$ Grade Level Diff.	1.31 $\bar{X}$ Grade Level Diff.	1.64 $\bar{X}$ Grade Level Diff.

* 8 out of 16 control (C4) children were not able to read after 1st grade; while every experimental (E4) child was reading at or above grade level.

Table 8

A Post 2nd Grade Comparison between the Experimental (E5) and Control (C5) Groups on Academic Grade Point Average *

Group	N	Measure	
		Academic Grade Point Av. Post-2nd 1971	$\bar{X}$ Letter Grade Equiv.
		$\bar{X}$ Grade Point Av.	
E5	17	2.54	C+ to B-
C5	19	1.79	D+ to C-
Diff. between groups		$\bar{X}$ Grade Point Diff. .75	

Code: A = 4.00
B = 3.00
C = 2.00
D = 1.00
E = 0.00

* The seven academic subjects averaged to compute this mean were reading, language, spelling, writing, social studies, science, and mathematics.